

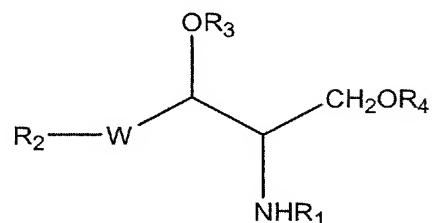
Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-29 (Cancelled).

30 (Previously presented). A compound of formula (I):



wherein

R_1 represents a hydrogen, a branched or linear alkyl, aryl, alkylamine, or a group $-C(O)R_5$;

R_2 and R_5 represent, independently, a branched or linear C_{10} - C_{24} alkyl, alkenyl or polyenyl groups;

R_3 and R_4 are independently a group $-C(O)-NR_6$, R_7 , R_6 and R_7 being the same or different for R_3 and R_4 and represent, independently, a hydrogen, or a saturated or unsaturated branched or linear polyalkylamine, wherein one or more amine units in said polyalkylamine may be a quaternary ammonium; or R_3 is a hydrogen; or

R_3 and R_4 form together with the oxygen atoms to which they are bound a heterocyclic ring comprising $-C(O)-NR_9-[R_8-NR_9]_m-C(O)-$, R_8 represents a saturated or unsaturated C_1-C_4 alkyl and R_9 represents a hydrogen or a polyalkylamine of the formula $-[R_8-NR_9]_n-$, wherein said R_9 or each alkylamine unit R_8NR_9 may be the same or different in said polyalkylamine; and

n and m , represent independently an integer from 1 to 10;

W represents a group selected from $-CH=CH-$, $-CH_2-CH(OH)-$ or $-CH_2-CH_2-$.

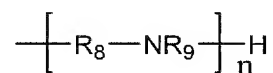
31 (Previously presented). The compound of Claim 30, wherein R_1 represents a $-C(O)R_5$ group, R_5 being as defined.

32 (Previously presented). The compound of Claim 30, wherein said R_2 and R_5 represent, independently, a linear or branched $C_{12}-C_{18}$ alkyl or alkenyl groups.

33 (Previously presented). The compound of Claim 30, wherein W represents $-CH=CH-$.

34 (Previously presented). The compound of Claim 30, wherein R_1 represents a $-C(O)R_5$ group; R_5 represents a $C_{12}-C_{18}$ linear or branched alkyl or alkenyl; W represents $-CH=CH-$; R_2 represents a $C_{12}-C_{18}$ linear or branched alkyl or alkenyl; R_1 and R_4 represent, independently, a group $C(O)-NR_6R_7$, and R_3 may also

represent a hydrogen, wherein **R₆ and R₇** represent, independently, a hydrogen or a polyalkylamine having the general formula (II):



wherein

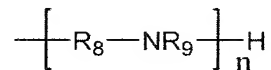
R₈ represent a C₁-C₄ alkyl;

R₉ represents a hydrogen or a polyalkylamine branch of formula (II), said **R₈** and **R₉** may be the same or different for each alkylamine unit, -**R₈NR₉**-, in the polyalkylamine of formula (II); and

n represents an integer from 3 to 6.

35 (Previously Presented). The compound of Claim 34, wherein **R₃** is a hydrogen atom.

36 (Previously Presented). The compound of Claim 30, wherein **R₁** represents a -C(O)**R₅** group; **R₅** represents a C₁₂-C₁₈ linear or branched alkyl or alkenyl; **W** represents -CH=CH-; **R₂** represents a C₁₂-C₁₈ linear or branched alkyl or alkenyl; **R₃** and **R₄** represent independently a group C(O)-**NR₆R₇**, wherein **R₆ and R₇** represent, independently, an alkylamine or a polyalkylamine having the general formula (II):



wherein

R₈ represent a C₁-C₄ alkyl;

R_9 represents a hydrogen or a polyalkylamine branch of formula (II), said R_8 and R_9 may be the same or different for each alkylamine unit, $-R_8NR_9-$, in the polyalkylamine of formula (II); and

n represents an integer from 3 to 6.

37 (Previously presented). The compound of Claim 30, wherein R_1 represents a $C(O)R_5$ group; R_5 represents a $C_{12}-C_{18}$ linear or branched alkyl or alkenyl; W represents $-CH=CH-$; R_2 represents a $C_{12}-C_{18}$ linear or branched alkyl or alkenyl; R_3 and R_4 form together with the oxygen atoms to which they are bonded a heterocyclic ring comprising $-C(O)-[NH-R_8]_n-NH-C(O)-$,

wherein

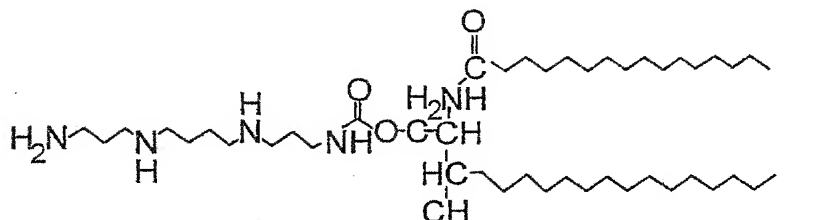
R_8 represents a C_1-C_4 alkyl, wherein for each alkylamine unit having the formula $-NH-R_8-$, said R_8 may be the same or different; and

n represents an integer from 3 to 6.

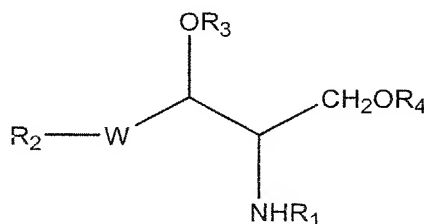
38 (Previously presented). The compound of Claim 30, wherein said R_8 is a C_3-C_4 alkyl.

39 (Previously presented). The compound of Claim 30, being N-palmitoyl D-erythro sphingosyl-1-carbamoyl spermine.

40 (Previously Presented). The compound of Claim 30, having the chemical structure as follows:



41 (Previously presented). A process for the preparation of a sphingoid-polyalkylamine conjugate of formula (I)



wherein

R_1 represents a hydrogen, a branched or linear alkyl, aryl, alkylamine, or a group $-C(O)R_5$;

R₂ and R₅ represent, independently, a branched or linear C₁₀-C₂₄ alkyl, alkenyl or polyenyl groups;

R_3 and R_4 are independently a group $-C(O)-NR_6R_7$, R_6 and R_7 being the same or different for R_3 and R_4 and represent, independently, a hydrogen, or a saturated or unsaturated

branched or linear polyalkylamine, wherein one or more amine units in said polyalkylamine may be a quaternary ammonium; or

R_3 represents a hydrogen; or

R_3 and R_4 form together with the oxygen atoms to which they are bound a heterocyclic ring comprising $-C(O)-NR_9-[R_8-NR_9]_m-C(O)-$, R_8 represents a saturated or unsaturated C_1-C_4 alkyl and R_9 represents a hydrogen or a polyalkylamine of the formula $-[R_8-NR_9]_n-$, wherein said R_9 or each alkylamine unit R_8NR_9 may be the same or different in said polyalkylamine; and

n and m represent independently an integer from 1 to 10;

W represents a group selected from $-CH=CH-$, $-CH_2-CH(OH)-$ or $-CH_2-CH_2-$;

the process comprises:

(a) providing a sphingoid compound of formula (I) wherein R_1 , R_2 and W have the meaning as defined above and R_3 and R_4 represent, independently, a hydrogen atom or an oxo protecting group, wherein at least one of said R_3 and R_4 represent a hydrogen atom;

(b) reacting said compound of step (a) with an activating agent, optionally in the presence of a catalyst, to obtain an activated R_3 and/or R_4 group;

(c) reacting said activated sphingoid compound with a polyalkylamine;

(d) removing said protecting group thereby obtaining said sphingoid-polyalkylamine conjugate of formula (I) as defined above.

42 (Previously presented). The process of Claim 41, wherein said sphingoid-polyalkylamine conjugate is N-palmitoyl D-erythro sphingosyl-1-carbamoyl spermine.

43 (Previously presented). The process of Claim 41, wherein said protecting group is a primary amine protecting group selected from trifluoroacetamide, fmoc, carbobenzoxy (CBZ), dialkyl Phosphoramidates.

44 (Previously presented). The process of Claim 41, wherein said activating agent is selected from N,N'-disuccinimidylcarbonate, di- or tri-phosgene or an imidazole derivative.

45 (Previously presented). The process of Claim 41, wherein said activation is performed in the presence of a catalyst, the catalyst being selected from 4-dimethylamino pyridine (DMAP), tetrazole, dicyanoimidazole or diisopropylethylamine.

46 (Previously presented). The process of Claim 41, for obtaining a di-substituted sphingoid-polyalkylamine conjugate, wherein

in step (a) both R₃ and R₄ are hydrogen atoms, and said process comprises reacting the compound of formula (I) with

at least two equivalents of polyalkylamine to obtain a disubstituted sphingoid-polyalkylamine conjugate, with identical polyalkylamine substituents.

47 (Previously presented). The process of Claim 41, for obtaining a di-substituted sphingoid-polyalkylamine conjugate, wherein

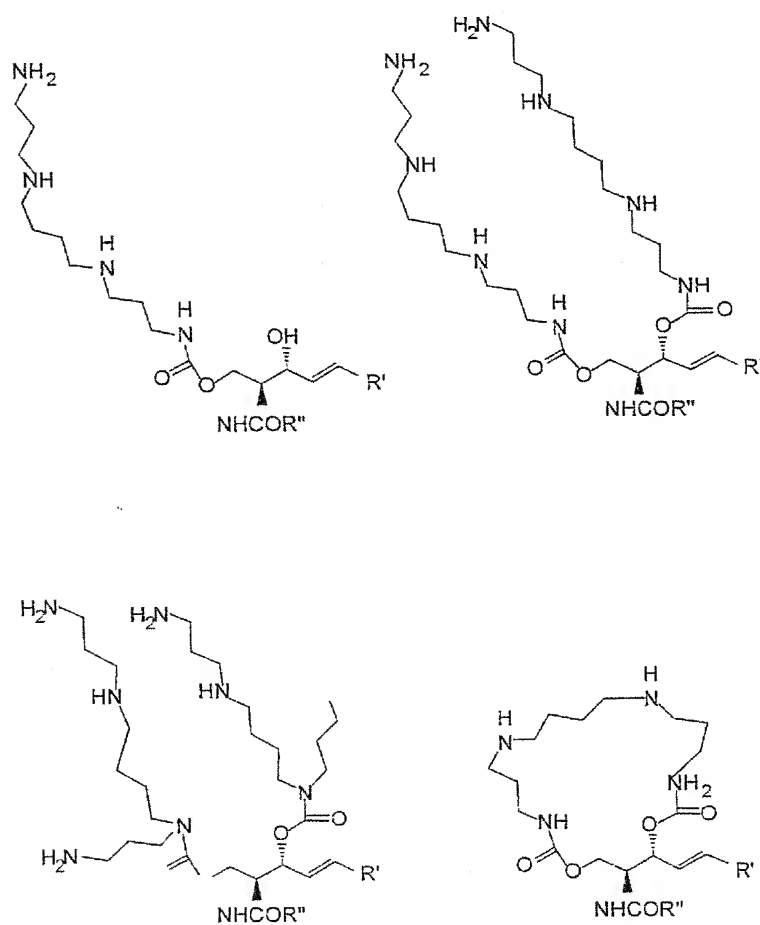
in step (a) at least one of R_3 or R_4 is protected with a protecting group, the process comprises reacting in step (c) the activated sphingoid compound with a first polyalkylamine; removing the protecting group of R_3 or R_4 to obtain an unprotected oxo group; reacting the unprotected compound with an activating agent to obtain an activated mono-substituted sphingoid-polyalkylamine conjugate; and reacting said activated mono-substituted sphingoid-polyalkylamine conjugate with a second polyalkylamine, thereby obtaining a di-substituted sphingoid-polyalkylamine conjugate, said first and second polyalkylamine may be the same or different.

48 (Previously presented). The process of Claim 41, for obtaining a heterocyclic sphingoid-polyalkylamine conjugate, wherein

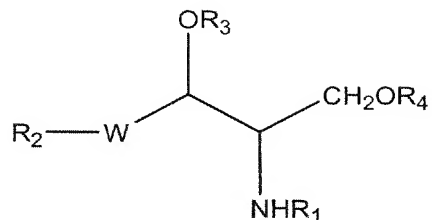
in step (a) both R_3 and R_4 are hydrogen atoms, said sphingoid compound is reacted with at least two equivalents of an activating agent to obtain an activated sphingoid with both R_3 and R_4 activated and reacting said activated sphingoid

compound with less than an equivalent of polyalkylamine, thereby obtaining a heterocyclic sphingoid-polyalkylamine conjugate.

49 (Currently Amended). The process of Claim 41, for obtaining any one of the sphingoid-polyalkylamine conjugates as follows: ~~depicted in Figs. 1A to 1D.~~



50 (Withdrawn). A composition comprising a sphingoid-polyalkylamine conjugate of the formula (I):



wherein

R_1 represents a hydrogen, a branched or linear alkyl, aryl, alkylamine, or a group $-\text{C}(\text{O})\text{R}_5$;

R_2 and R_5 represent, independently, a branched or linear C_{10} - C_{24} alkyl, alkenyl or polyenyl groups;

R_3 and R_4 are independently a group $-\text{C}(\text{O})-\text{NR}_6$, R_6 and R_7 being the same or different for R_3 and R_4 and represent, independently, a hydrogen, or a saturated or unsaturated branched or linear polyalkylamine, wherein one or more amine units in said polyalkylamine may be a quaternary ammonium; or

R_3 is a hydrogen; or

R_3 and R_4 form together with the oxygen atoms to which they are bound a heterocyclic ring comprising $-\text{C}(\text{O})-\text{NR}_9-[\text{R}_8-\text{NR}_9]_m-\text{C}(\text{O})-$, R_8 represents a saturated or unsaturated C_1 - C_4 alkyl and R_9 represents a hydrogen or a polyalkylamine of the formula $-\text{R}_8-\text{NR}_9]_n-$, wherein said R_9 or each alkylamine unit R_8NR_9 may be the same or different in said polyalkylamine; an

n and m are independently an integer from 1 to 10;

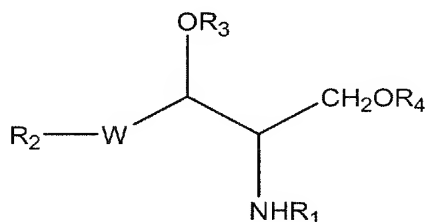
W represents a group selected from $-\text{CH}=\text{CH}-$, $-\text{CH}_2-$
 $\text{CH}(\text{OH})-$ or
 $-\text{CH}_2-\text{CH}_2-$.

51 (Withdrawn). The composition of Claim 50,
further comprising a pharmaceutically acceptable carrier.

52 (Withdrawn). The composition of Claim 50,
wherein said sphingoid-polyalkylamine conjugate is N-palmitoyl
D-erythro sphingosyl-1-carbamoyl spermine.

53 (Withdrawn). The composition of Claim 50,
further comprising a biologically active molecule.

54 (Withdrawn). In the method of capturing a
molecule having a negative charge, a negative dipole or a
local negative dipole with a conjugate capable of capturing
said molecule by electrostatic interaction, the improvement
wherein said conjugate is a compound of formula (I):



wherein

R_1 represents a hydrogen, a branched or linear alkyl,
aryl, alkylamine, or a group $-\text{C}(\text{O})\text{R}_5$;

R_2 and R_5 represent, independently, a branched or
linear C_{10} - C_{24} alkyl, alkenyl or polyenyl groups;

R_3 and R_4 are independently a group $-C(O)-NR_6$, R_7 , R_6 and R_7 being the same or different for R_3 and R_4 and represent, independently, a hydrogen, or a saturated or unsaturated branched or linear polyalkylamine, wherein one or more amine units in said polyalkylamine may be a quaternary ammonium; or

R_3 is a hydrogen; or

R_3 and R_4 form together with the oxygen atoms to which they are bound a heterocyclic ring comprising $-C(O)-NR_9-[R_8-NR_9]_m-C(O)-$, R_8 represents a saturated or unsaturated C_1-C_4 alkyl and R_9 represents a hydrogen or a polyalkylamine of the formula $-[R_8-NR_9]_n-$, wherein said R_9 or each alkylamine unit R_8NR_9 may be the same or different in said polyalkylamine; and n and m are independently an integer from 1 to 10;

W represents a group selected from $-CH=CH-$, $-CH_2-CH(OH)-$ or $-CH_2-CH_2-$.

55 (Withdrawn). The method of Claim 54, wherein said compound is N-palmitoyl D-erythro sphingosyl-1-carbamoyl spermine.

56-58 (Cancelled)

59 (Previously Presented). The compound of Claim 34, wherein R_3 and R_4 represent the same or different polyalkylamine.